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[58 FR 55013, Oct. 25, 1993, as amended at 70 FR 72048, Nov. 30, 2005]

§ 3280.605 Joints and connections.

(a) *Tightness.* Joints and connections in the plumbing system shall be gastight and watertight for the pressures required under testing procedures.

(1) *Assembling of pipe.* All joints and connections shall be correctly assembled for tightness. Pipe threads shall be fully engaged with the threads of the fitting. Plastic pipe and copper tubing shall be inserted to the full depth of the solder cup or welding sockets of each fitting. Pipe threads and slip joints shall not be wrapped with string, paper, putty, or similar fillers.

(2) *Threaded joints.* Threads for screw pipe and fittings shall conform to the approved or listed standard. Pipe ends shall be reamed out to size of bore. All burrs, chips, cutting oil and foreign matter shall be removed. Pipe joint cement or thread lubricant shall be of approved type and applied to male threads only.

(3) *Solder joints.* Solder joints for tubing shall be made with approved or listed solder type fittings. Surfaces to be soldered shall be cleaned bright. The joints shall be properly fluxed with noncorrosive paste type flux and, for manufactured homes to be connected to a public water system, made with solder having not more than 0.2 percent lead.

(4) *Plastic pipe, fittings and joints.* Plastic pipe and fittings shall be joined by installation methods recommended by the manufacturer or in accordance with the provisions of a recognized, approved, or listed standard.

(5) *Union joints.* Metal unions in water piping shall have metal-to-metal ground seats.

(6) *Flared joints.* Flared joints for soft-copper water tubing shall be made with approved or listed fittings. The tubing shall be expanded with a proper flaring tool.

(7) *Cast iron soil pipe joints.* Approved or listed cast iron pipe may be joined as follows:

(i) Approved or listed hubless pipe as per the manufacturer's recommendation.

(ii) Hub and plain-end soil pipe may be joined by compression fittings per the manufacturer's recommendation.

[40 FR 58752, Dec. 18, 1975. Redesignated at 44 FR 20679, Apr. 6, 1979, as amended at 53 FR 23611, June 23, 1988]

§ 3280.606 Traps and cleanouts.

(a) *Traps*—(1) *Traps required.* Each plumbing fixture, except listed toilets, shall be separately trapped by approved water seal ''P'' traps. All traps shall be effectively vented.

(2) *Dual fixtures.* A two-compartment sink, two single sinks, two lavatories, or a single sink and a single lavatory with waste outlets not more than 30 inches apart and in the same room and flood level rims at the same level may be connected to one ''P'' trap and may be considered as a single fixture for the purpose of drainage and vent requirements.

(3) *Prohibited traps.* A trap which depends for its seal upon concealed interior partitions shall not be used. Full ''S'' traps, bell traps, drum traps, crown-vented traps, and running traps are prohibited. Fixtures shall not be double-trapped.

(4) *Material and design.* Each trap shall be self-cleaning with a smooth and uniform interior waterway. Traps shall be manufactured of cast iron, cast brass, or drawn brass tubing of not less than No. 20 Brown and Sharpe gage, or approved or listed plastic, or other approved or listed material. Union joints for a trap shall be beaded to provide a shoulder for the union nut. Each trap shall have the manufacturer's name stamped or cast in the body of the trap, and each tubing trap shall show the gage of the tubing.

(5) *Trap seal.* Each ''P'' trap shall have a water seal of not less than 2 inches and not more than 4 inches and shall be set true to its seal.

(6) *Size.* Traps shall be not less than 1¼ inches in diameter. A trap shall not be larger than the waste pipe to which it is connected.

(7) *Location.* Each trap shall be located as close to its vent and to its fixture outlet as structural conditions will permit.

(8) *Length of tailpiece.* The vertical distance from a trap to the fixture outlet shall not exceed 24 inches.

(9) *Installation.* (i) *Grade of trap arm.* The piping between a ''P'' trap and the fixture tee or the vented waste line shall be graded ¼ inch per foot towards the vent and in no event shall have a slope greater than its diameter. The vent opening at fixture tees shall not be below the weir of the ''P'' trap outlet.

(ii) *Trap arm offset.* The piping between the ''P'' trap and vent may change direction or be offset horizontally with the equivalent of no more than 180 degrees total change in direction with a maximum of 90 degrees by any one fitting.

(iii) *Concealed traps.* Traps with mechanical joints shall be accessible for repair and inspection.

(iv) *Removability of traps, etc.* Traps shall be designed and installed so the ''U'' bend is removable without removing the strainers from the fixture. Continuous waste and tail pieces which are permanently attached to the ''U'' bend shall also be removable without removing the strainer from the fixture.

(b) *Cleanout openings*—(1) *Location of cleanout fittings.* (i) Cleanouts shall be installed if the drainage system cannot be cleaned through fixtures, drains, or vents. Cleanouts shall also be provided when fittings of more than 45 degrees are used to affect an offset except where long turn ells are used which provide sufficient ''sweep'' for cleaning.

(ii) A full size cleanout shall be installed at the upper end of any section of drain piping which does not have the required minimum slope of ¼ inch per foot grade.

(iii) A cleaning tool shall not be required to pass through more than 360 degrees of fittings, excluding removable ''P'' traps, to reach any part of the drainage system. Water closets may be removed for drainage system access.

(2) *Access to cleanouts.* Cleanouts shall be accessible through an unobstructed minimum clearance of 12 inches directly in front of the opening. Each cleanout fitting shall open in a direction opposite to the flow or at right angles to the pipe. Concealed cleanouts